

E7.3 10952  
CR-133628

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## INVESTIGATION OF ERTS-A IMAGES FOR APPLICATION TO THEMATIC MAPPING

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July 1, 1973

Type II Progress Report for period January 1, 1973 to June 30, 1973

Prepared for:  
Goddard Space Flight Center  
Greenbelt, Maryland 20771

Publication authorized by the Director, U.S. Geological Survey

(E73-10952) INVESTIGATION OF ERTS-A  
IMAGES FOR APPLICATION TO THEMATIC  
MAPPING Progress Report, 1 Jan. - 30  
Jun. 1973 (Geological Survey) 5 p HC  
\$3.00

N73-30290

Unclas  
CSCL 08B G3/13 00952

**TECHNICAL REPORT STANDARD TITLE PAGE**

1. Report No.		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle INVESTIGATION OF ERTS-A IMAGES FOR APPLICATION TO THEMATIC MAPPING (SR 116)				5. Report Date July 1, 1973	
				6. Performing Organization Code	
7. Author(s) Dean T. Edson (IN 385), Doyle G. Smith				8. Performing Organization Report No.	
9. Performing Organization Name and Address U.S. Geological Survey Washington, D.C. 20244				10. Work Unit No.	
				11. Contract or Grant No. S-70243-AG	
12. Sponsoring Agency Name and Address Frederick Gordon Goddard Space Flight Center Greenbelt, Maryland 20771				13. Type of Report and Period Covered Type II Progress Report 1 Jan. 1973-30 June 1973	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract  Theme extractions, enlarged to proper scale can prove a simple and convenient tool for evaluation of small scale map content, and as a guide to and for map revision. Open water extractions provide a graphic, easy to read, historical documentation of the recent Mississippi River flood at successive times during the flood period. Open water extractions, used in conjunction with swamp/wetland extractions, can be used to document and monitor temporal changes in wetland water levels.					
17. Key Words Suggested by Author Swamp-Wetland Thematic Mapping Open Water Forest-Field Vegetation Ice-Snow Cover Mass Works of Man				18. Distribution Statement	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Not applicable		21. No. of Pages 5	
				22. Price	

Figure 2A. Technical Report Standard Title Page. This page provides the data elements required by DoD Form DD-1473, HEW Form OE-6000 (ERIC), and similar forms.

TYPE II PROGRESS REPORT

ERTS-A

- A. Title: Investigation of ERTS-A Images for Application to Thematic Mapping

ERTS-A Proposal No. SR 116

- B. GSFC ID No. of P.I.: IN 385

- C. Statement and explanation of any problems impeding progress of the investigation:

1. Theme extraction of open water depicting Mississippi River flood was, and is, hampered by delays in the receipt at the Sioux Falls EDC of the May 4, 5, 6 MSS images.
2. Research into use of special films and chemistries for theme extraction is being hampered by contractual problems related to procurement of foreign-manufactured goods.

- D. Discussion of accomplishments during the reporting period, and of those planned for the next reporting period.

1. During this reporting period, two complete sets of theme extractions were derived for the Washington-Baltimore image area, one set from images obtained in October 1972 and the other from a February 1973 image set. The open water, works of man (urban/suburban areas), forest, and field extractions correlate well with existing 1:250,000-scale topographic maps of the area. The areal fidelity of these extractions is now being examined by one of the other Principal Investigators as part of a related experiment.
2. An open-water theme extraction of an area near Greenville, S.C., was enlarged to 1:250,000 scale for correlation with existing topographic maps. The enlargement indicates several reservoirs, large and small, now shown on the present map. This technique thus shows some utilitarian promise in the updating of various small-scale maps.
3. The March-April Mississippi River flood provided an excellent opportunity to document a natural disaster. Open-water theme extractions obtained from the March 31 and May 5 ERTS-1 passes, superimposed over open water extractions from images obtained last October, produced change-detection graphics which impressively demonstrate and document the extent of the flood

as of these two dates. These theme graphics, reproduced at 1:1,000,000 scale, will be used to construct 1:1,000,000-scale mosaics which will document the extent of the flood from St. Louis to New Orleans.

4. The current theme extraction effort continuing into the next reporting period is oriented toward wetland identification-classification-delineation in cooperation with another Principal Investigator pursuing a related experiment in the CARETS region. This work leads to expectations that theme extractions based on temporal change will provide a reasonable basis upon which to define the boundary between open water and wetland, or swamp.
- E. Discussion of significant scientific results, and their relationship to practical applications or operational problems, including estimates of the cost/benefits of any significant results.
1. The various theme extractions show promise as a fast and simple tool for evaluating content of existing small-scale maps and identifying those map areas in need of revision.
  2. The theme extractions, as in the case of the Mississippi flood, can provide a valuable, easy-to-read historical document of a natural disaster and a record which can be readily matched against, or compared with, past and future records to evaluate extent of disaster area, success of disaster-control devices, and rate of recovery of a devastated area after disaster strikes.
  3. The open-water theme extractions, used in conjunction with wetland/swamp delineation extractions, show great promise as a means of documenting man's incursions into wetland regions and also a means of recording the progress and source of large changes in water level which may signal the eventual death of a wetland area if not rectified.
- F. A listing of published articles and/or papers, preprints, in-house reports, or abstracts of talks released during the reporting period:
1. Participation in NASA public relations movie report on ERTS-1.
  2. Information brochure titled AUTOGRAPHIC THEME EXTRACTION.
- G. Recommendations concerning practical changes in operations, additional investigative effort, correlation of effort and/or results as related to a maximum utilization of the ERTS system:

None

H. Changes in standing order forms:

None

I. ERTS Image descriptive forms:

N/A

J. Changes in Data Request forms:

None

K. DCP status

N/A